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REPLY TO WRITTEN OPINION
INTERNATIONAL PATENT APPLICATION PCT/FI2004/050041
APPLICANT: ECOCAT OY ET AL.
DUE DATE: 17 February 2005

On account of the Written Opinion issued on 11 August 2004 we submit the following:

The claims have been amended to fulfill the requirements of novelty and inventive step. New claim 1 corresponds to old claims 1, 13 and 14. New claims 13–21 correspond to old claims 15–23. New claim 22 corresponding to old claim 24 has been amended analogously to new claim 1. New claims 23–26 correspond old claims 25–28.

New claims are now new. The objective problem is to provide a porous sheet that efficiency reduces particles of exhaust gas in open channels. The solution is not obvious because those features described in claims fulfill the objective problem in a new combination way not described in prior art. This way is not obvious for a person skilled in the art because there is no hint for that problem solution in those documents either. Thus the solutions are new and inventive.

BERGGREN OY AB



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ENCL Amended claims

Claims

1. A porous sheet for treating exhaust gases of combustion engines in open channels, **characterized** in that at least part of the porous sheet (3, 3a, 3b) has a covering support (33) having pores (35) over 10 nm and coarse particles over 1,4 µm, the area mass of support (33) is from 20 to 200 g/ m² and the BET specific surface area of support (33) is from 30 to 300 m²/g.
- 5 2. A porous sheet(s) according to claim 1, **characterized** in that essentially all openings (32) of the porous sheet (3, 3a, 3b) have a filling support (33) having pores (35) over 10 nm and coarse particles over 1,4 µm.
- 10 3. A porous sheet(s) according to claim 1 or 2, **characterized** in that said porous sheet (3, 3a, 3b) is a mesh sheet.
4. A porous sheet according to claim, 3 **characterized** in that the mesh size of said mesh sheet (3) is from 30 to 300.
- 15 5. A porous sheet according to any preceding claim, **characterized** in that said porous sheet is a corrugated sheet (3b).
6. A porous sheet according to any preceding claim, **characterized** in that the median particle size of support (33) is from 1,5 to 3,5 µm.
7. A porous sheet according to any preceding claim, **characterized** in that the median pore size of said support (33) is over 5 nm.
- 20 8. A porous sheet according to any preceding claim, **characterized** in that the median pore size of said support (33) is over 10 nm.
9. A porous sheet according to any preceding claim, **characterized** in that said support (33) comprises catalytically active material.
- 25 10. A porous sheet according to any preceding claim, **characterized** in that said support (33) comprises catalytically inert particles having median particle size from 10 to 200 µm.
11. A porous sheet according to any preceding claim, **characterized** in that said support (33) comprises catalytically inert coarse alumina-, silica, zirconia-, ceria- or/and titania-particles.

12. A porous sheet according to any preceding claim, **characterized** in that at least part of support (33) has been milled.
13. A porous sheet according to any preceding claim, **characterized** in that said support (33) comprises fibres, which are projecting out from the plane of said support.
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14. A metal substrate having open channels for treating exhaust gases of combustion engines, **characterized** in that said substrate (1) comprises at least one porous sheet according to claim 1 to 13.
15. A metal substrate according to claim 14, **characterized** in that said substrate
10 (1) comprises at least one other sheet (2a, 2b, 5).
16. A metal substrate according to claim 17, **characterized** in that said other sheet (2a, 2b, 5) is smooth, perforated, mesh, wire mesh or fibrous sheet.
17. A metal substrate according to claim 14 to 16, **characterized** in that said other sheet is a flat (2b) or corrugated sheet (2a, 5).
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18. A metal substrate according to claim 14 to 17, **characterized** in that other sheet(s) (2a, 2b, 5) has been essentially covered with the support (33) of porous sheet(s) (3, 3a, 3b) according to claim(s) 1 to 15.
19. A metal substrate according to claim 14 to 18, **characterized** in that other sheet(s) (2a, 2b, 5) and porous sheet(s) (3, 3a, 3b) have been covered with same support (33).
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20. A metal substrate according to any claim 14 to 19, **characterized** in that porous sheet(s) (3, 3a, 3b) and/or other sheet(s) (2a, 2b, 5) comprises impressions and/or projections.
21. A metal substrate according to any claim 14 to 20, **characterized** in that said substrate (1) is a pre-oxicatalyst, hydrolysis catalyst and/or a SCR oxicatalyst.
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22. A method for manufacturing a porous sheet for treating exhaust gases of combustion engines in open channels, **characterized** in that the porous sheet (3, 3a, 3b) is at least partially covered with a support (33) having pores (35) over 10 nm and coarse particles over 1,4 µm and having the area mass of support (33) from 20 to 200 g/ m² and the BET specific surface area of support (33) from 30 to 300 m²/g.
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23. A method for manufacturing a porous sheet according to claim 22, **characterized** in that the essentially all openings (32) of porous sheet(s) (3, 3a, 3b) are filled with support (33) having pores (35) over 10 nm and coarse particles over 1,4 µm.
- 5 24. A method for manufacturing a metal substrate for treating exhaust gases of combustion engines, **characterized** in that at least one porous sheet according to claim 1 to 15 is joined to said substrate (1) so that there are open channels (4) in said substrate.
- 10 25. A porous sheet(s) according to claims 1 to 15 or manufactured according to a method of claim 22–23, **characterized** in that said porous sheet(s) (3, 3a, 3b) is used to purify impurity particles (34) from exhaust gases of combustion engines.
26. A metal substrate according to claims 14 to 21 or manufactured according to a method of claim 24, **characterized** in that said substrate (1) is used to purify impurity particles of exhaust gases of combustion engines.